

**BEFORE THE HON'BLE KERALA STATE ELECTRICITY REGULATORY
COMMISSION**

In the Matter of : **Petition under Regulation 66 of the KSERC(Renewable Energy and Net Metering) Regulations,2020 seeking modification of the KSERC (Renewable Energy and Net Metering Regulations),2020.**

Petitioner : **Kerala State Electricity Board Ltd,
Vydyuthi Bhavanam, Pattom,
Thiruvananthapuram**

THE PETITIONER HUMBLY SUBMITS THE FOLLOWING THAT:

1. The petitioner, Kerala State Electricity Board Limited (KSEBL), has filed this petition seeking **modification** of the KSERC (Renewable Energy and Net Metering Regulations),2020 **in line with the** "The Electricity (Rights of Consumers) Rules,2020 notified on 31-12-2020 and the Electricity(Rights of Consumers)Amendment Rules,2021 notified on 28-6-2021 and the present trend of solar penetration.

Background of the petition

2. Hon'ble Commission has on 7-2-2020 notified KSERC (Renewable Energy and Net Metering) Regulations,2020 applicable to all the existing and new, Grid Interactive Renewable Energy Systems, consumers, prosumers, captive consumers, captive generating plants, generating companies, distribution licensees and obligated entities, in the matter of Determination of Tariff of Renewable Energy, Renewable Purchase Obligation, Net Metering, Banking, Generation Based Incentives and related matters. The Regulation came into effect from 5th of June 2020.
3. The Regulations provide 'Net Metering` facility for grid interactive RE systems of not less than one kW and not exceeding 1000 kW capacity on AC side of the inverter. The relevant regulation is extracted below.

Quote:

"13(2) The Grid Interactive Renewable Energy Systems, installed by a prosumer at his premise under this chapter shall be: (a) of not less than one kW and not exceeding 1000 kW capacity on AC side of the inverter connected to the net meter

of the distribution system, limited to the sanctioned connected load or contract demand as applicable to the prosumer, with the distribution licensee.

Provided that the domestic consumers with connected load up to 20 kW is permitted to install 'Renewable Energy System' of capacity up to 20 kW, irrespective of their connected load. Provided further that the above limit of 20 kW connected load shall not apply in the case of group housing societies and residential flats, for common services such as lift, common lighting, club house, car parking, common areas etc.

Provided also that, prosumers including those prosumers mentioned above are also permitted to install Renewable Energy System in excess of their connected load or contract demand as applicable. However, the benefit of net metering shall not be allowed to such prosumers and such prosumers shall be treated at par with the prosumers having RE capacity more than 1 MW, as detailed in Chapter IV of these Regulations.

Provided also that, the Renewable Energy Systems installed by the prosumers under net metering as on the date of notification of these Regulations shall be allowed to continue irrespective of their contract demand or connected load."

Unquote:

4. The Regulations allow banking facility for such renewables as submitted below.

Quote:

"20. Banking facility for prosumers.- (1) In case the energy injected by the prosumer from his renewable energy system exceeds the energy consumed by him from the distribution licensee during the billing period, such excess energy is allowed to be banked with the distribution licensee and to be carried forward to the subsequent billing periods of the settlement period.

(2) The distribution licensee is permitted to account the energy generated from above such renewable energy system installed by the prosumer towards its RPO.

"

Unquote:

5. The energy accounting, banking and settlement of renewable energy systems under 'Net Metering' are as submitted below.

"21. Net metering, Energy Accounting, Banking and Settlement.-

(1) The distribution licensee shall take the meter reading of the 'renewable energy system' regularly for each 'billing period' and record the readings of both the renewable energy meter and the net meter.

(2) For each billing period, the distribution licensee shall make the following information available in its bill to the prosumer: (i) Time period wise (normal hours, peak hours and off-peak hours) Renewable energy generation recorded in the energy meter for the prosumer with connected load above 20 kW, and total generation from the RE system for the prosumers with connected load 'of

and below 20kW'. (ii) Time period wise electricity consumption of the prosumer with connected load above 20 kW, and total consumption in the case of the prosumer with connected less than 20 kW. (iii) Net billed electricity, if any, for which payment is to be made by the prosumer; (iv) Excess energy brought forward from the last billing period; (v) Excess energy carried forward to the next billing period.

(3) The energy accounting, banking and settlement of energy generated, drawn and injected by a prosumer with connected load of and below 20 kW shall be done as below; (i) The distribution licensee, during a billing period shall extend the facility to the prosumer having connected load of and below 20 kW under net metering arrangements, to draw back from the grid, the electricity injected during a time block at a different time period without any restriction. (ii) In case the electricity supplied by the distribution licensee during any billing period exceeds the electricity injected in to the grid by the prosumer from his renewable energy system, the distribution licensee shall raise a bill for the net electricity consumption at the prevailing tariff, after adjusting any excess electricity banked from the previous billing period; (iii) In case the electricity injected by the prosumer's renewable energy system exceeds the electricity consumed from the distribution licensee during the billing period, such excess energy shall be allowed to be banked and be carried forward to the next billing period as specified under Regulation 20(1) above.

(4) Accounting and settlement of energy generated, drawn and injected by the prosumer having connected load above 20 kW; (i) The electricity injected from the renewable energy system in a time period during a billing period shall be first set off against the electricity consumed during the same time period. (ii) Any excess generation over consumption in that time period during the billing period shall thereafter be set-off against other time period, subject to the following. (a) 80% of the net energy injected in time periods other than peak hours, be allowed to adjust against peak hour consumption. (b) The net energy injected during peak hours shall be allowed to be adjusted 100% during the peak hour and the balance shall be allowed to be adjusted 120% during other time blocks. (c) At all other time periods, except energy injection during peak hours, 100% of the net energy injected in any time periods will be allowed to adjust against the consumption, during the time period other than peak hours. (iii) Any excess generation during a billing period, after adjusting against the consumption during the same billing period as per clause (i)&(ii) above shall be banked and carried forward, to the next billing period as specified under Regulation-20(1) above. (iv) Such surplus energy carried forward to the next billing period after accounting for the banking charges specified therein shall be, accounted along with the renewable energy generation during the subsequent billing period, and the same shall be settled against the energy drawn in the subsequent billing period as per the procedures specified under clause (i) & (ii) above. (v) If the

electricity injected into the system by the prosumer as measured in the net meter, is less than the total electricity drawn from the licensee, during any billing period, the licensee shall recover from such prosumer, the electricity charges at the rates applicable as per the tariff order issued by the Commission, for the net quantum of electricity drawn by him from the distribution system, after taking into account any balance electricity banked in the previous billing period.

(5) The licensee shall pay to the prosumer for the net electricity balance in his account at the end of the settlement period, at the Average Power Purchase Cost (APPC) approved by the Commission; Provided that, in case of delay in payment of the net amount due to the prosumer beyond 30 days from the settlement date, the licensee shall pay interest to the prosumer at the FBIL rate +200 base points prevailing on 1st April of the settlement year.

(6) The prosumer is exempted from the payment of transmission charges, wheeling charges, cross subsidy surcharges for the electricity generated and consumed at the same premises from the renewable energy system under net metering facility.

(7) The quantum of electricity generated from the renewable energy system of the prosumer, shall qualify for accounting towards the Renewable Purchase Obligation (RPO) of the distribution licensee, as specified elsewhere in these Regulation."

Unquote:

6. Thus as per the above Regulations,
 - (1) for prosumer having connected load of and below 20 kW under net metering arrangements, they are allowed to draw back from the grid, the electricity injected during a time block at a different time period without any restriction. Excess energy shall be allowed to be banked and be carried forward to the next billing period .
 - (2) For prosumer having connected load above 20 kW; only 80% of the net energy injected in time periods other than peak hours, be allowed to adjust against peak hour consumption. The net energy injected during peak hours shall be allowed to be adjusted 100% during the peak hour and the balance shall be allowed to be adjusted 120% during other time blocks. Any excess generation during a billing period, after adjusting against the consumption during the same billing period as above shall be banked and carried forward, to the next billing period.

7. For prosumers and captive consumers above 1MW, the energy accounting and billing is as stipulated under Regulation 26 and 27 of the KSERC(Renewable Energy and Net Metering)Regulations,2020, the summary of the same is submitted below.

(1) 5% of the energy injected into the grid of the transmission and/or the distribution licensee shall be accounted towards 'grid support charges' and the balance 95% shall be treated as net energy.

(2) 80% of the net energy injected in time periods other than peak hours, be allowed to be adjusted against peak hour consumption. The net energy injected during peak hours shall be allowed to be adjusted 100% during the peak hour and the balance shall be allowed to be adjusted at 120% during other time blocks. At all other time periods, except energy injection during peak hours, 100% of the net energy injected in any time periods will be allowed to be adjusted against the consumption, during the time period other than peak hours.

(3) The excess energy, if any, available at the end of the billing period is allowed to be banked and carried forward to the subsequent billing period of the settlement period, subject to the following,- (i) 95% of the energy so banked only will be allowed to be adjusted in the subsequent billing period of the settlement period and 5% of the banked energy shall be accounted towards banking charges of the distribution licensee.

(4) The 5% banking charges on the energy banked at the end of billing period shall not be cumulative.

(5) The licensee shall pay, within one month, for the net surplus energy available at the credit of the prosumer at the end of the settlement period as per sub Regulation (4) above, at the Average Pooled Power Purchase Cost (APPC) of the licensee approved by the Commission, from time to time.

(6) The prosumer, who installed the Renewable Energy System at the same premise is exempted from the payment of transmission charges, wheeling charges, transmission losses and distribution loss for the quantum of energy generated from the RE plant and adjusted against his consumption during the settlement period, in the same premises. (1) Any captive consumer, using the transmission and/or distribution system of the licensee for wheeling the energy generated from the Renewable Energy System to a different location within the State, shall pay the following charges approved by the Commission from time to time,- a. Transmission charges b. Wheeling charges c. Transmission losses and Distribution losses, and d. Any other charges approved by the Commission. Captive consumers who maintain the contract demand with the distribution licensee are required to pay transmission charges only on per unit basis at the rates as approved by the Commission from time to time.

8. Thus, as per the energy accounting and settlement procedure stipulated in the KSERC(Renewable Energy and Net metering)Regulations,2020 net metering is adopted for settling the energy generated by the prosumers and Captive consumers in the State.

Issue No.1: Introduction of 'Gross Metering/Net Billing schemes in the State

9. Net metering was introduced to promote solar generation which was in the nascent stage. However, now solar technology has achieved grid parity and significant addition in solar generation is being integrated to the grid. In this scenario, continuing 'net metering' methodology is creating heavy financial burden on the DISCOMs.
10. The demand pattern of Kerala is such that the demand during peak hours varies from that during the normal hours by 400MW to 800MW. To meet the peak demand, the costliest power in the merit order has to be scheduled. The cost of power during peak hours is very much higher than in normal hours. The average Market Clearing Price during day time is below Rs.3.50/unit, whereas during peak hours the Market Clearing Price range from Rs.4.50/unit to Rs.6.00/unit and can go even up to Rs.9-12/unit in extreme summer months. In this situation of huge variation in price of peak and other than peak time period, forcing the DISCOM to provide costlier peak power to such consumers almost at zero cost will create a huge financial liability for the DISCOM, especially with increasing RE penetration.
11. Further, in time blocks other than peak hours, the demand will be generally low and the DISCOM will have to surrender the conventional energy sources to accommodate the RE injection by the consumers, which again is at a cost as the DISCOM will have to pay fixed charges to the generators on surrender.
12. The year wise installed capacity of solar prosumers (excluding Soura scheme) till December 2022 is given in table below

Installed capacity in MW of solar prosumers					
	2017-18	2018-19	2019-20	2020-21	2021-22 (upto Dec)
Total	10.21	79.16	121.71	176.28	226.61

13. In addition to the above installed capacity of 226.61MW upto December 2021, another 66.23 MW is expected to be added before 31st March 2022 under Soura Scheme.
14. The Cumulative solar capacity expected for the next five years considering solar addition anticipated is given in table below

Expected solar capacity (MW) during next five years	
	Capacity addition expected

Year	Prosumer	under Soura scheme	Total cumulative capacity
Cumulative capacity till Dec 21			226.61
2021-22 (till Mar 22)		66.23	292.84
2022-23	73.62	150(domestic)	516.46
2023-24	102.49	100(domestic)	718.95
2024-25	143.24	100(domestic)	962.19
2025-26	195.08		1157.27
2026-27	258.02		1415.29

The solar energy generation due to the expected capacity @ CUF 0.19 as detailed in the table above is given below:

Energy addition expected (MU)					
	2022-23	2023-24	2024-25	2025-26	2026-27
Total	859.60	1196.62	1601.47	1926.16	2355.61

15. The huge addition in solar capacity as above will lead to corresponding reduction in energy sales in the coming years.

16. In this connection, following are humbly submitted:

(a) 'Net metering' and the principle of settling prosumers and captive consumers with APPC for their excess energy injection was adopted in the initial stage when there was a need for promotion of solar at large scale and when solar tariff was high. However, with rapidly declining solar tariff and the revenue loss to the DISCOMs with 'Net Metering', MoP has come out with 'Gross metering' and 'Net Billing' schemes through "The Electricity (Rights of Consumers) Rules,2020 notified on 31-12-2020 and the Electricity(Rights of Consumers)Amendment Rules,2021 notified on 28-6-2021.

(b) In line with the above, many states have adopted 'Gross Metering' and 'Net Billing' method and have taken a different principle for settling the excess energy injection by prosumers and captive consumers, some of which are listed below.

	State	Gross Metering, Net Billing Schemes
1	Tamilnadu	The State has also introduced 'Gross Metering', 'Net Billing' schemes as follows: Net billing or Net feed-in: The monetary value of the imported energy is debited based on the applicable retail tariff; The monetary value of the exported energy is credited